



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,331	03/27/2001	Eliot M. Case	1816 (USW 0619 PUS)	1119

22193 7590 08/09/2004

QWEST COMMUNICATIONS INTERNATIONAL INC
LAW DEPT INTELLECTUAL PROPERTY GROUP
1801 CALIFORNIA STREET, SUITE 3800
DENVER, CO 80202

EXAMINER

VO, HUYEN X

ART UNIT	PAPER NUMBER
----------	--------------

2655

DATE MAILED: 08/09/2004

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/818,331

Applicant(s)

CASE ET AL.

Examiner

Huyen Vo

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-20 is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 5/27/2004 have been fully considered but they are not persuasive.

As per claims 1 and 8, the applicant argues that prior art of record fails to disclose that "the impact value of a particular speech item is based upon how descriptive and/or important a word is" (Amendment page 3), "the step of determining a desired inflection for each speech item in the sequence of speech items based on the syllable count and the impact value for a particular speech item" (Amendment page 4), and "the method for converting text to concatenated voice as described by Applicants' independent claim 1" (Amendment page 4). However, prior art of record discloses all the limitations mentioned above: "the impact value of a particular speech item is based upon how descriptive and/or important a word is" (*the COST FUNCTION sections on col. 12-15, how well the a speech unit candidate fits with its neighbor speech unit candidates explains how descriptive and/or important that candidate is*), "the step of determining a desired inflection for each speech item in the sequence of speech items based on the syllable count and the impact value for a particular speech item" (*col. 23, ln. 35-67 counting syllable, and col. 13, ln. 39 to col. 14, ln. 67, inflection is determined based on how well each candidate units concatenated together in term of their pitch*), and "the method for converting text to concatenated voice as described by Applicants' independent claim 1" (*figure 1*).

Art Unit: 2655

As per claim 2, the applicant argues that prior art of record fails to disclose that "Jacks fails to disclose or suggest determining an impact value for each speech item and the step of determining a desired inflection for each speech item in the sequence of speech items based on the syllable count and the impact value for the particular speech item". However, Coorman et al. already taught the step of "determining an impact value for each speech item and the step of determining a desired inflection for each speech item in the sequence of speech items based on the syllable count and the impact value for the particular speech item" as mention in claim 1 above.

Therefore, claims 1-15 remain rejected over prior art of record.

Allowable Subject Matter

16-20 are

2. Claims ~~16-19~~ allowed over prior art of record.
3. Regarding claim 16, Coorman et al. disclose a method for converting text to concatenated voice by utilizing a digital voice library and a set of playback rules, the method further comprising: determining a syllable count for each speech item in the sequence of speech items (*col. 23, In. 35-45 and col. 23, In. 35-67*); determining an impact value for each speech item in the sequence of speech items (*the COST FUNCTION sections on col. 12-15 explained in claim 1 in the response to argument section above*); determining a pitch value within a range for each speech item in the sequence of speech items by normalizing the impact value for the particular speech item (*col. 13, In. 48-53*); determining a desired inflection for each speech item in the sequence of speech items based

Art Unit: 2655

on the syllable count and the pitch value for the particular speech item and further based on the set of playback rules (*col. 23, ln. 35-45 and col. 23, ln. 35-67 and the Cost Function in col. 12-15*); determining a sequence of voice recordings by determining a voice recording for each speech item based on the desired inflection for the particular speech item and based on the available voice recordings that correspond to the particular speech item (*col. 9, ln. 33-37*); and generating voice data based on the sequence of voice recordings by concatenating adjacent recordings in the sequence of voice recordings (*col. 9, ln. 51-56*). Coorman et al. fail to specifically disclose the method wherein the playback rules dictate that the desired inflection for a glue item is based on the desired inflection for surrounding payload items and that the desired inflection for a payload item is based on the desired inflection for nearest payload items with priority being given to speech items having a greater pitch value such that the desired inflections are determined first for speech items having the greatest pitch value and, thereafter, are determined for speech items in order of descending pitch. Furthermore, it would have not been obvious to one of ordinary skill in the art at the time of invention to modify Coorman et al. by incorporating the teaching above. Therefore, claims 16-19 are allowed over prior art of record.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 9-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification discloses the pitch value between 1 and 5, but fails to indicate measurement unit associated with these values to enable one to understand.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless – (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Coorman et al. (US Patent No. 6665641).

8. Regarding claim 1, Coorman et al. disclose a method for converting text to concatenated voice by utilizing a digital voice library and a set of playback rules (col. 8, ln. 59 to col. 9, ln. 56), the digital voice library including a plurality of

Art Unit: 2655

speech items and a corresponding plurality of voice recordings wherein each speech item corresponds to at least one available voice recording wherein multiple voice recordings that correspond to a single speech item represent various inflections of that single speech item (col. 9, ln. 1-8), the method including receiving text data, converting the text data into a sequence of speech items in accordance with the digital voice library (col. 9, ln. 13-25), the method further comprising:

- determining a syllable count for each speech item in the sequence of speech items (col. 23, ln. 35-45);

- determining an impact value for each speech item in the sequence of speech items (col. 9, ln. 33-44 or referring to the COST FUNCTION sections on col. 12-15, the impact value is interpreted as how well the speech item fits in the concatenated speech);

- determining a desired inflection for each speech item in the sequence of speech items based on the syllable count and the impact value for the particular speech item and further based on the set of playback rules (col. 9, ln. 26-37);

- determining a sequence of voice recordings by determining a voice recording for each speech item based on the desired inflection for the particular speech item and based on the available voice recordings that correspond to the particular speech item (col. 9, ln. 33-37); and

- generating voice data based on the sequence of voice recordings by concatenating adjacent recordings in the sequence of voice recordings (col. 9, ln. 51-56).

9. Regarding claim 8, Coorman et al. further disclose that a plurality of speech items includes a plurality of words, the method further comprising:
- determining a pitch value for each speech item in the sequence of speech items by normalizing the impact value for the particular speech item (col. 10, ln. 49-55 of col. 13, ln. 48-53), wherein the desired inflection for each speech item is further based on the pitch value for the particular speech item (col. 10, ln. 43-53).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Coorman et al. (US Patent No. 6665641) in view of Jacks et al. (US Patent No. 4692941).

12. Regarding claim 2, Coorman et al. fail to specifically disclose that the speech items are glue items and a plurality of the speech items are payload items, the method further comprising:
- setting a flag for any speech item in the sequence of speech items that is a glue item, wherein the playback rules dictate that the desired inflection for a

glue item is based on the desired inflection for surrounding payload items in the sequence of speech items and that the desired inflection for a payload item is based on the desired inflection for nearest payload items in the sequence of speech items.

However, Jacks teach a method of setting a flag for any speech item in the sequence of speech items that is a glue item (col. 4, ln. 48-50, the main point is to identify glue words), wherein the playback rules dictate that the desired inflection for a glue item is based on the desired inflection for surrounding payload items in the sequence of speech items and that the desired inflection for a payload item is based on the desired inflection for nearest payload items in the sequence of speech items (col. 9, ln. 51 to col. 10, 27). The advantage of using the teaching of Jacks et al. in Coorman et al. is to analyze the structure of the sentence and assign appropriate prosody to each word to make the synthesized speech sound more naturally.

Since the modified Coorman et al. and Jacks et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Coorman et al. by incorporating the teaching of Jacks et al. in order to analyze the structure of the sentence and assign appropriate prosody to each word to make the synthesized speech sound more naturally.

13. Claims 3-5 ~~and 17-19~~ are rejected under 35 U.S.C. 103(a) as being unpatentable over Coorman et al. (US Patent No. 6665641) in view of Jacks et

al. (US Patent No. 4692941) and further in view of Minowa et al. (US Patent No. 6438522).

14. Regarding claims 3 ~~and 17~~, the modified Coorman et al. fail to specifically disclose that a plurality of speech items includes a plurality of phrases. However, Minowa et al. teach that a plurality of speech items includes a plurality of phrases (col. 7, ln. 6-10). The advantage of using the teaching of Minowa et al. in the modified Coorman et al. is to allow the system to process phrase input speech items.

Since the modified Coorman et al. and Gasper et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Coorman et al. by incorporating the teaching of Gasper et al. in order to allow the system to process phrase input speech items.

15. Regarding claims 4 ~~and 18~~, the modified Coorman et al. fail to specifically disclose that a plurality of speech items includes a plurality of phrases. However, Minowa et al. teach that a plurality of speech items includes a plurality of words (col. 7, ln. 6-10). The advantage of using the teaching of Minowa et al. in the modified Coorman et al. is to allow the system to process single word input speech items.

Since the modified Coorman et al. and Gasper et al. are analogous art because they are from the same field of endeavors, it would have been obvious

to one of ordinary skill in the art at the time the invention was made to further modify Coorman et al. by incorporating the teaching of Gasper et al. in order to allow the system to process single word input speech items.

16. Regarding claims 5 ~~and 6~~, the modified Coorman et al. fail to specifically disclose that a plurality of speech items includes a plurality of syllables.

However, Minowa et al. teach that a plurality of speech items includes a plurality of syllables (col. 7, ln. 10-25). The advantage of using the teaching of Gasper et al. in the modified Coorman et al. is to increase processing speed by using syllable-based segmentation scheme to reduce the number of speech models.

Since the modified Coorman et al. and Minowa et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Coorman et al. by incorporating the teaching of Minowa et al. in order to increase processing speed by using syllable-based segmentation scheme to reduce the number of speech models.

17. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Coorman et al. (US Patent No. 6665641) in view of Gasper et al. (US Patent No. 5278943).

18. Regarding claim 6, Coorman et al. fail to specifically disclose that multiple voice recordings that correspond to a single speech item represent various

Art Unit: 2655

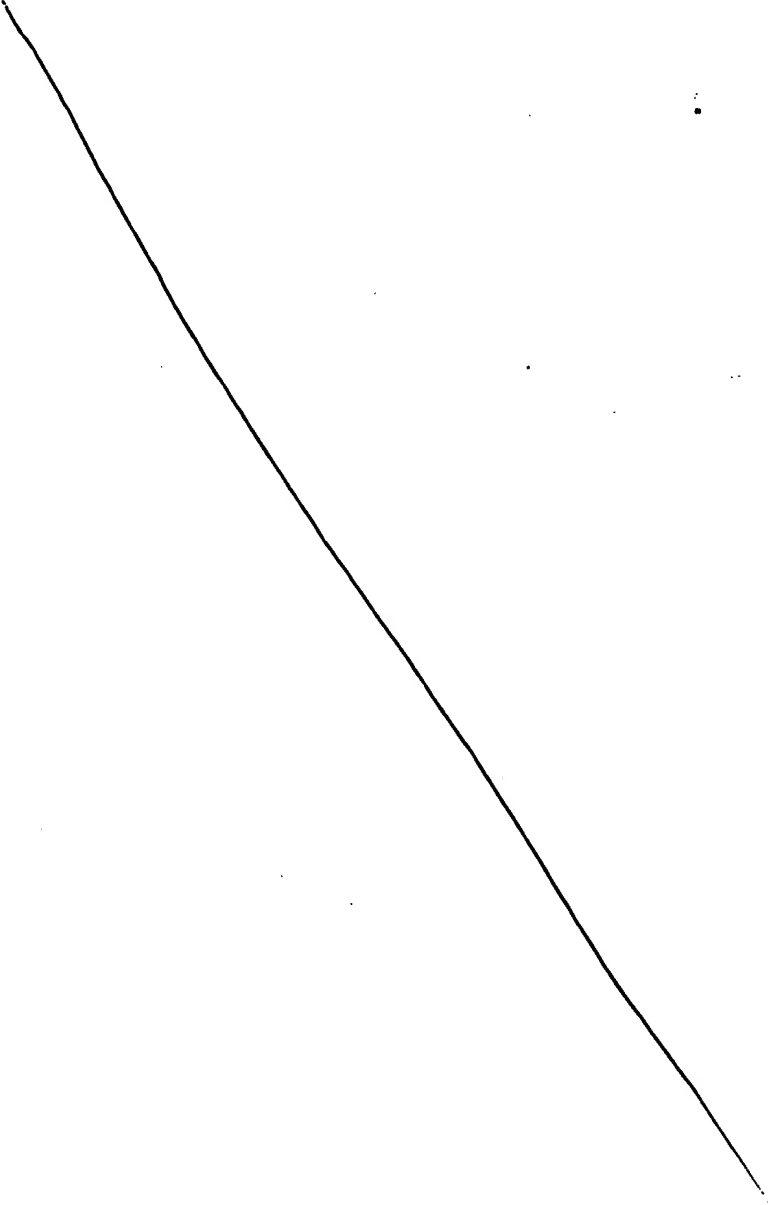
inflections of that single speech item and wherein the various inflections belong to various inflection groups including a at least one standard inflection group, at least one emphatic inflection group, and at least one question inflection group. However, Gasper et al. suggest that stored recordings having different prosodic environments (col. 13, ln. 18-29). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Coorman et al. by specifically making records of these different inflections to provide the digital library a wide range of speech variations of particular words to enhance speech synthesis capabilities and increase system's reliabilities.

19. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Coorman et al. (US Patent No. 6665641) in view of Gasper et al. (US Patent No. 5278943) and further in view of Jacks et al. (US Patent No. 4692941).

20. Regarding claim 7, the modified Coorman et al. fail to specifically disclose that at least one question inflection group includes a single word question inflection group and a multiple word question inflection group. However, Jacks et al. teach that at least one question inflection group includes a single word question inflection group and a multiple word question inflection group (col. 9, ln. 45-50). The advantage of using the teaching of Jacks et al. in Coorman et al. is to assign appropriate pitch to word(s) in a question to make the speech sound more naturally.

Art Unit: 2655

Since the modified Coorman et al. and Jacks et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Coorman et al. by incorporating the teaching of Jacks et al. in order to assign appropriate pitch to word(s) in a question to make the speech sound more naturally.



Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huyen Vo whose telephone number is 703-305-8665 and email address is huyen.vo@uspto.gov. The examiner can normally be reached on M-F, 9-5:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 703-305-4827. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner Huyen X. Vo



August 4th, 2004


W. R. YOUNG
PRIMARY EXAMINER